

# Differential Receiver

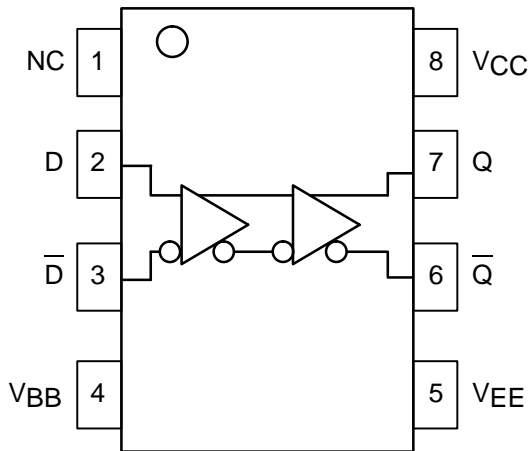
The MC10EL/100EL16 is a differential receiver. The device is functionally equivalent to the E116 device with higher performance capabilities. With output transition times significantly faster than the E116 the EL16 is ideally suited for interfacing with high frequency sources.

The EL16 provides a  $V_{BB}$  output for either single-ended use or as a DC bias for AC coupling to the device. The  $V_{BB}$  pin should be used only as a bias for the EL16 as its current sink/source capability is limited. Whenever used, the  $V_{BB}$  pin should be bypassed to ground via a 0.01 $\mu$ f capacitor.

Under open input conditions (pulled to  $V_{EE}$ ) internal input clamps will force the Q output LOW.

- 250ps Propagation Delay
- High Bandwidth Output Transitions
- 75k $\Omega$  Internal Input Pulldown Resistors
- >1000V ESD Protection

### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



## MC10EL16 MC100EL16



**D SUFFIX**  
PLASTIC SOIC PACKAGE  
CASE 751-05

### PIN DESCRIPTION

PIN	FUNCTION
D	Data Inputs
Q	Data Outputs
$V_{BB}$	Ref. Voltage Output



# MC10EL16 MC100EL16

## DC CHARACTERISTICS ( $V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$ ; $V_{CC} = \text{GND}$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$I_{EE}$	Power Supply Current 10EL 100EL		18 18	22 22		18 18	22 22		18 18	22 22		18 21	22 26	mA
$V_{BB}$	Output Reference Voltage 10EL 100EL	-1.43 -1.38		-1.30 -1.26	-1.38 -1.38		-1.27 -1.26	-1.35 -1.38		-1.25 -1.26	-1.31 -1.38		-1.19 -1.26	V
$V_{EE}$	Power Supply Voltage 10EL 100EL	-4.75 -4.20	-5.2 -4.5	-5.5 -5.5	-4.75 -4.20	-5.2 -4.5	-5.5 -5.5	-4.75 -4.20	-5.2 -4.5	-5.5 -5.5	-4.75 -4.20	-5.2 -4.5	-5.5 -5.5	V
$I_{IH}$	Input HIGH Current			150			150			150			150	μA

## AC CHARACTERISTICS ( $V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$ ; $V_{CC} = \text{GND}$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$t_{PLH}$ $t_{PHL}$	Propagation Delay to Output (Diff) (SE)	125 75	250 250	375 425	175 125	250 250	325 375	175 125	250 250	325 375	205 155	280 280	355 405	ps
$t_{SKEW}$	Duty Cycle Skew <sup>1</sup> (Diff)		5			5	20		5	20		5	20	ps
$V_{PP}$	Minimum Input Swing <sup>2</sup>	150			150			150			150			mV
$V_{CMR}$	Common Mode Range <sup>3</sup>	-0.4		See <sup>3</sup>	-0.4		See <sup>3</sup>	-0.4		See <sup>3</sup>	-0.4		See <sup>3</sup>	V
$t_r$ $t_f$	Output Rise/Fall Times Q (20% – 80%)	100	225	350	100	225	350	100	225	350	100	225	350	ps

1. Duty cycle skew is the difference between a TPLH and TPHL propagation delay through a device.

2. Minimum input swing for which AC parameters guaranteed. The device has a DC gain of  $\approx 40$ .

3. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{ppmin}$  and 1V. The lower end of the CMR range is dependent on  $V_{EE}$  and is equal to  $V_{EE} + 2.5V$ .

OUTLINE DIMENSIONS

D SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751-05  
ISSUE P



NOTES:

1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
3. DIMENSIONS ARE IN MILLIMETER.
4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.35	0.49
F	0.40	1.25
G	1.27 BSC	
J	0.18	0.25
K	0.10	0.25
M	0°	7°
P	5.80	6.20
R	0.25	0.50

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